

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application of Michael E. Seitz

Art Unit 1611

Serial No. 10/728,654

Filed December 5, 2003

Confirmation No. 8454

For MICROCAPSULES WITH AMINE ADJUSTED RELEASE RATES

Examiner Barbara S. Frazier

April 6, 2011

**PRE-APPEAL BRIEF REQUEST FOR REVIEW**

Applicants request Pre-Appeal Brief Review because the final rejection is predicated on a critical error of fact on the comparative effect of plural isocyanates vs. plural amines on properties of the claimed microcapsules, and the PTO has neither addressed nor acknowledged the grounds on which Applicant has traversed the rejection.

**The Invention**

The claimed invention is directed to a pesticidal material in which a substantially water-immiscible core material comprising a pesticide is encapsulated in a microcapsule shell having a predetermined permeability. The shell of the microcapsule is formed by interfacial polymerization of a polyisocyanate with select combinations of a principal amine and an auxiliary amine different from the principal amine. The microcapsule has a release rate which is characterized by a half-life ranging from about 5 days to about 100 days.

**The Rejections**

The claims stand rejected under §112 for lack of enablement and under §103(a) for obviousness over Seitz et al. '595 which describes an encapsulation process in which the shell wall is formed by reaction of a single amine with a combination of isocyanates, in view of Becher 4,563,212 which admits of more than one amine but describes no formulation containing more than one amine.

**Justification for Pre-Appeal Brief Review**

During prosecution, a number of grounds of rejection were successfully overcome. But the PTO has not addressed or acknowledged the grounds on which Applicants rely to overcome the remaining rejections. Applicants have taken care to

specifically respond to the remaining concerns raised by the Examiner, both in the final rejection and in a telephone interview subsequent to final action. But the Advisory action merely repeats the substance of the final action without responding to or acknowledging the critical points in Applicants' further submissions that respond directly and specifically to the Examiner's concerns.

#### Status

In response to the final Office action and a subsequent telephone interview, Applicants relied on the gross and favorable differences between the effect of a combination of amines vs. a combination of isocyanates on properties of the shell wall as reflected in the respective working examples of the two specifications. During the interview, the Examiner adhered to the manifestly erroneous finding that the pattern of half life vs. ratio of different isocyanates in Seitz '595 is similar to the pattern of half life vs. ratio of different amines in the claimed material. The Examiner did not accept the comparative plots of these data as submitted by Applicants during prosecution as demonstrating the stark difference in the effect of plural amines vs. plural isocyanates, primarily because the data from Applicants' working examples had not been plotted on the same scale on which Seitz et al. had plotted their data.

Applicants submitted a supplemental response to the Office action on March 16, 2011 to specifically address the concerns raised by Examiner Frazier.

The adverse Advisory action of March 23, 2011 has not addressed the pivotal arguments and data relied on by Applicants in either the formal response to the final action, the March 14th interview, or the March 16th supplemental response. In particular, the Advisory action does not address or acknowledge either: (i) the graphic presentation of data that was prepared in response to the specific request made by the Examiner during the interview; (ii) the effect of these data as establishing error in the Examiner's assumptions about the comparative effect of plural amines vs. plural isocyanates; (iii) the effect of these data on the issues of enablement or obviousness; or (iv) the independent but related traversal of *prima facie* obviousness based on the unpredictable effects of differences in mass transfer, kinetics and phase equilibria.

**Argument**

Attached to the Supplemental Response of March 16 are three Exhibits, copies of which are attached hereto, in which controlled release half life data from the working examples of the instant application are plotted *on the same field and at the same scale* as data from Seitz et al. '595, as requested by Examiner Frazier. Half life data from the working examples of the instant application are plotted against the ratio of principal to auxiliary amine, and half life data from Seitz are plotted against the ratio of two different isocyanates.

By comparison of these plots, it is apparent that the half life of the claimed formulations is a relatively smooth, continuous function of amine ratio which affords highly advantageous control of pesticide release rate. In contrast, the half life of the Seitz formulations varies erratically vs. ratio of isocyanates, with gross discontinuities and apparently capricious reversals of direction in half life, resulting in much poorer control.

**Section 103(a)**

In an amine/isocyanate microencapsulation process, the amine is sourced in the continuous aqueous phase and the isocyanate is sourced in the dispersed organic phase. Given the difference in source, the effect of a combination of amines on half life would be expected to differ unpredictably from the effect of a combination of isocyanates, because of unpredictable differences in the effect of mass transfer, kinetics, and phase equilibria on the properties of the shell wall.

The Exhibits prepared in response to the Examiner's request are respectfully submitted to both: (i) corroborate that the effect of plural amines was indeed unpredictable from the effect of plural isocyanates; and (ii) demonstrate the surprisingly superior control of half life that is afforded by a combination of amines as contrasted with a combination of isocyanates. However, the Advisory action fails to acknowledge either the comparison presented in the Exhibits or the differences of mass transfer, kinetics and phase equilibria which render the claimed invention unpredictable from Seitz.

The final action and the Advisory action remain rooted in the plainly erroneous finding that Seitz '595 shows a pattern of half life vs. isocyanate ratio that is comparable to the pattern of half life vs. amine ratio according to the instantly claimed invention.

The secondary Becher reference admits of more than one amine, but contains no enabling disclosure of such, and entirely fails to predict the advantageous results which Applicants have achieved.

Enablement

Claim 1 is limited to combinations wherein the auxiliary amine comprises an epoxy-amine adduct, a polyetheramine, or an amine comprising a moiety selected from the group consisting of an aryl moiety and a cycloalkyl moiety; and the principal amine comprises a linear polyalkylamine or an epoxy-amine adduct. The working examples of the specification demonstrate the effect of combinations of a polyalkylamine and a polyetheramine (Example 1), a polyalkylamine and an amine comprising an aryl moiety (Example 3), and a polyalkylamine and an epoxy amine adduct (Example 6).

With the benefit of Applicants' disclosure, one skilled in the art can use the simple protocol provided by Applicants to readily identify other combinations within the ambit of the claims.

Conclusion

From comparison of the final action and the Advisory action with Applicants' position as laid out in the interview and Supplemental Response of March 16, 2011, it is manifest that the PTO has not addressed Applicants' position; and that if reviewed and understood, Applicants explanations and a comparison of the data establish patentability under §103(a) and enablement under §112.

Withdrawal of the final rejection and allowance of the pending claims are respectfully solicited.

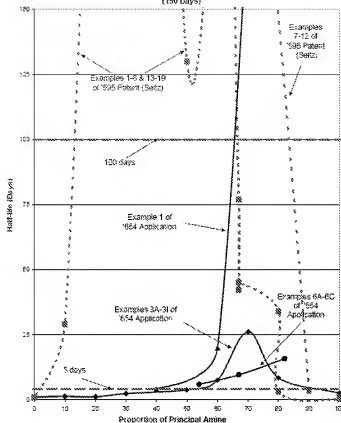
Respectfully submitted,

/John K. Roedel, Jr./

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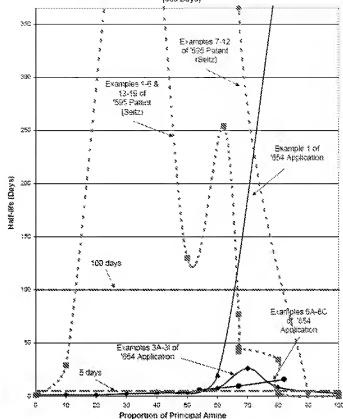
Serial No. 10728,654

Exhibit A

Comparison of '654 Application v. '595 Patent  
(150 Days)

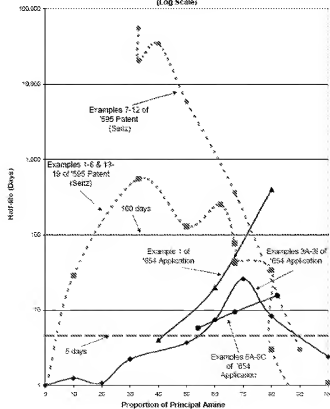
Serial No. 10728,654

Exhibit B

Comparison of '654 Application v. '595 Patent  
(365 Days)

Serial No. 10728,654

Exhibit C

Comparison of '654 Application v. '595 Patent  
(Log Scale)

**PRE-APPEAL BRIEF REQUEST FOR REVIEW**

Docket Number (Optional)

40-21(3584)B/US; MTC 6634.1

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on \_\_\_\_\_

Signature \_\_\_\_\_

Typed or printed name \_\_\_\_\_

Application Number

10728654

Filed

12/05/2003

First Named Inventor

Michael E. Seitz

Art Unit

1611

Examiner

Barbara S. Frazier

Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request.

This request is being filed with a notice of appeal.

The review is requested for the reason(s) stated on the attached sheet(s).

Note: No more than five (5) pages may be provided.

I am the

☐ applicant/inventor.

/John K. Roedel, Jr./

☐ assignee of record of the entire interest.  
See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed.  
(Form PTO/SB/96)

Signature

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April 6, 2011

Registration number if acting under 37 CFR 1.34 \_\_\_\_\_

Date

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required.

Submit multiple forms if more than one signature is required, see below.

☒ \*Total of 1 forms are submitted.

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